DOCUMENT RESUME

ED 387 996 EC 304 351

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TITLE Culturally Sensitive Family-Focused Assistive Technology Assessment Strategies.
PUB DATE 3 Nov 95
NOTE 15p.; Paper presented at the DEC Early Childhood Conference on Children with Special Needs (Orlando, FL, November 30-December 2, 1995).
PUB TYPE Speeches/Conference Papers (150) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Assistive Devices (for Disabled); *Cultural Influences; *Decision Making; Delivery Systems; *Disabilities; Equipment Evaluation; *Evaluation Methods; Family Environment; Individualized Family Service Plans; Infants; Models; Preschool Education; *Selection; Toddlers

ABSTRACT

This review of the literature on assistive technology (AT) assessment strategies for infants and toddlers focuses on taking cultural differences into account while developing individualized family service plans. Topics covered include current practices and issues, including the value of a team approach and the need to consider child factors, AT device factors, and service system factors. Family, cultural and other related issues addressed include family expectations of AT, changes in family interaction patterns and stress, the social environment, cultural influences, ethnicity, acculturation, social influences, developmental expectations, and life experiences. A comprehensive model for AT decision-making is offered in the context of future assessment considerations. The review concludes that professionals should become competent in both family-centered strategies and culturally competent intervention approaches. Contains 93 references. (DB)

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Culturally Sensitive Family-Focused Assistive Technology Assessment Strategies

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Paper presented to the DEC Early Childhood Conference
on Children with Special Needs
Orlando, Florida

November 3, 1995

EC304351

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Culturally Sensitive Family-Focused Assistive Technology Assessment Strategies

When developing individualized family service plans (IFSPs), parents and professionals often have differing values about early childhood special education and express differing priorities for services. These differing values and priorities become evident during decision-making and assessment processes.

The IDEA reauthorization legislation (*Individuals with Disabilities Education Act Amendments of 1991*, P. L. 102-119) mandates that assistive technology devices and services may be among the *early intervention services* that can be included in the IFSP under Part H. These devices and services should be directly related to the family's concerns and priorities and the child's IFSP, with determinations being based on a variety of approaches used to collect information. From a family-centered perspective, the assumption in these processes is that families participate *actively* in the approach according to what they feel is right for them.

While the language of Part H reflects a clear intent for professionals to facilitate greater family involvement in early intervention service delivery, including assessment activities, family members still may not be as actively involved in decision-making as desired from a family-centered perspective. Examination of the current national trend toward providing family-centered early intervention services reveals discrepancies between best practice indicators (DEC Task Force on Recommended Practices, 1993), or what is recommended in quality programs, and assistive technology assessment practices.

Current Practices

Assistive technology (AT) decision-making is often relegated to professionals who have traditionally assumed primary responsibility for assessment and prescription. Families may view the judgments of professionals to be more important than their own. This feeling of loss of power, or transfer of decision-making power to professionals who are viewed as knowing "what is best" for the family, may contribute to the loss of much valuable information during the AT assessment process. This contributes to the identification of outcomes which are important from the perspective of the professional rather than the family.

Until recently, family members and children with disabilities have been relegated to being passive recipients of assistive technology devices and services. For example, Parette (in press) found that Directors for state projects funded under the *Technology-Related Assistance for Individuals with Disabilities Act of 1988* (P. L. 100-407) reported more passive involvement of family members in augmentative and alternative communication (AAC) decision-making processes than would be desirable in family-centered practices. Such passive participation may be a function of the lack of information about assistive technology options which is often reported by family members and consumers with disabilities (Hayward & Elliott, 1992; Hayward, Tashjian, Wine, & Curtin, 1992; Parette & VanBiervliet, 1991). When family members do not have a knowledge base regarding assistive devices, there is a natural tendency to rely on professionals who are perceived to have the requisite training and information necessary to make appropriate decisions about assistive devices. This reliance on professionals may reinforce professional beliefs that many family members are incapable of participation in decision-making roles.

Issues Currently Considered

Numerous descriptions of assistive technology assessment processes have been described in the literature (Baumgart, Johnson, & Helmstetter, 1990; Church & Glennen, 1992; Male, 1994; Mann & Lane, 1991; Ray & Warden, 1995), though these descriptions have typically been directed toward school-age children and adults, with little attention being given to AT processes for infants and toddlers and their families.

A Team Approach

AT for infants and toddlers with disabilities cannot be appropriately provided without team participation. AT teams are necessary since no one individual or discipline will have all the information available regarding the range of assistive devices that might be helpful for a child. Variety in team membership is also important given that technology outcomes are value-laden, and may differ in importance based on who is evaluating them (Fuhrer, 1995). AT decision-making practices until recently have reflected a more traditional, and *less family-centered approaches*. In making decisions about AT devices and services, three domains have been the focus of professional and family assessment efforts:

child, technology, and service system domains (Parette, in press; Parette & Brotherson, in press).

Child Factors

Early intervention personnel involved in AT assessment processes must examine specific child-related factors in order to identify *appropriate technology* which can be appropriately used by the young child with disabilities and the family. Appropriateness has been defined in various ways. From a more traditional perspective, AT devices are appropriate when they meet three criteria: they (a) are related to specific and clearly defined goals that are meaningful to the child and family; (b) are compatible with practical constraints, such as the available resources or amount of training required for the child and others to use the technology; and (c) should result in the child and family achieving desirable and sufficient outcomes (Office of Technology Assessment, 1982; Parette, in press). Since the provision of AT devices and services are linked to IFSP development, devices and services should be viewed from the perspective of child strengths and needs in *naturalistic settings*. Specific child factors that have been discussed in the literature include those presented in Figure 1.

The IFSP must include a statement of the infant or toddler's present levels of development in physical, cognitive, communication, social and emotional, and adaptive development. This provides a holistic view of the child, or tentative starting point for examination of child characteristics by providing the team with important information relating to the child's functioning in various domains.

While the child's level of development provides an initial starting point for AT decision-making, other specific device-related issues may also be considered (see Figure 2). These factors include age, gender, past experiences, training needs, desire for independence, preferences, current devices used, and physical location of the child.

AT Device Factors

Specific features of assistive devices are typically examined by team members in the process of assessment after an understanding of the child's characteristics and needs have been determined (see Figure 3). These include the range of devices, potential to enhance levels of performance, cost, ease of use, comfort, dependability, transportability, longevity and durability, adaptability, compatibility with other devices, present and future needs, opportunity for hands-on experience, safety features, and repair considerations.

Service System Factors

The third area of concern which has traditionally been addressed by the IFSP team includes factors directly related to the service system's ability to provide needed AT devices and services (see Figure 4). Financing of AT devices may be the most important service system issue (Church & Glennen, 1992; Klein, Walker, & Foster, 1994/95). However, the reality of potentially limited funding of the Part H system presents a major challenge to team members, and underscores the effective practice of identifying appropriate technologies for infants and toddlers. Often, inexpensive assistive devices or those which can be modified, customized, or made by the service system personnel at minimal cost may be appropriate for some young children. Team members may consider leasing as an alternative to purchasing expensive devices, thus minimizing hidden expenses. Another effective practice solution is to utilize community resources as an alternative funding source when severe fiscal resource limitations are present (Parette, Murdick, & Gartin, in press).

When devices are prescribed for infants and toddlers with disabilities, protection from theft and damage may become an issue. This is particularly true when young children will be using devices across a range of naturalistic settings. While a particular facility where early intervention services are provided may have coverage for theft or damage while a device in on site, liability issues may need to be examined if the device leaves the facility.

Integrally linked to the financing of assistive devices are intervention personnel training needs. Effective team members should not ignore the necessity of training personnel how to use AT devices efficiently. While many assistive devices can easily be used without training, more sophisticated devices (e.g., keyboard emulators, nondedicated speech devices, environmental control systems) may require considerable early intervention personnel training commitments. Thought should also be given to the attitudes held by professionals requiring training in the use of assistive devices. Some professionals *do not want to learn* to use technology, just as some children show no interest in using specific applications (Hutinger, 1994). Professional resistance to using devices, whether intentional or not, has been observed

when devices are made inaccessible to children (Hutinger, 1994). A recent study by Moratinos (1995) found that teacher perceptions of students' abilities to learn to communicate is the strongest predictor of their intentions to provide and use augmentative and alternative communication (AAC) systems in classroom settings. These perceptions, however, were also found to be strongly affected by their own skills and responsibilities to provide AAC training in the classroom (Moratinos, 1995).

While technology benefits for young children with disabilities and their families may occur after their delivery, the resources of the service delivery system, belief in technology benefits, technology competence of professionals who work with the child and family, the child, and the interest, resources, and persistence of families all appear to be related to positive outcomes (Hutinger, 1994).

Transportation may become an issue for some children, particularly when medical technologies (e.g., apnea monitors, respirators) or powered mobility devices must be transported across naturalistic or other service settings. Team members should give careful consideration to the coordination of services necessary to insure that assistive devices prescribed for infants and toddlers with disabilities may be safely and efficiently transported within and across service systems.

Transition needs of individual children and families must be addressed as part of the IFSP (34 CFR §303.344). Infants and toddlers with disabilities may require varying types of AT devices across environmental settings. Device needs may also change as the child transitions into various components of the service system (e.g., hospital to home, home to center-based program, center-based program to preschool). In all instances, team members will need to consider AT devices and services for the child and family that will insure smooth transitions.

Family, Cultural and Other Related Issues

While consideration of child characteristics, device features, and service system issues are important in the AT assessment process, they are only several components of more comprehensive approaches that are being discussed in the professional literature. It is being recognized that family, cultural, ethnic, acculturation, developmental expectations, social influences, and life experiences also exert influences on the process of AT decision-making.

Family Issues

When parents and primary caregivers collaborate with professionals, there is a recognition that (a) the family is the constant in the child's life, while services and professionals within the system are always in a state of flux; and (b) AT device recommendations are flexible, accessible, and responsive to family needs. Several reports have emphasized that when family members are involved in decision-making regarding assistive devices, there is a greater likelihood that they will perceive ownership of the interventions recommended (Angelo, 1995; Beukelman & Mirenda, 1992; Parette & Angelo, in press). Such participation has also been reported to result in both family satisfaction for devices prescribed and more favorable regard for professionals (Crais, 1991). When family members are not involved in AT decision-making, important family issues may not be addressed, resulting in the prescription of inappropriate devices. This, in turn, can result in noncompliance or abandonment of recommended intervention strategies which incorporate use of the device.

Family expectations of AT. Parent concerns are more likely to focus on characteristics of the service system environment and inadequacies of equipment rather than inadequacies of children and activities (Hutinger, 1994). Several researchers (Culp, Ambrosi, Berniger, & Mitchell, 1986; Naisbitt, 1984) have noted the tendency of some people to believe (or hope) that technology is a panacea, thus abdicating personal responsibility for appropriate use of devices (Margalit, 1990). In the process of assessment, such parental attitudes cannot be ignored, since they may contribute to disappointment and anger when the technology fails to live up to their expectations. Angelo (1995) commented that parental anticipation of benefits expected from AT may be diminished when families must modulate their routines and schedules with the demands required for device usage. Families also have expectations regarding quality of life and attainment of personal values and goals, though such expectations are typically not considered in AT decision-making (George et al., 1988; Gitlin, Levine, & Geiger, 1989).

Professional and parent perceptions of technology usage also differ markedly (Hutinger, 1994). Parents of younger children have been reported to use technology for social and emotional purposes, while parents of older students typically use technology for cognitive purposes. Swartz (1994) found that home usage of technology was strongly influenced by parent and sibling assistance, as well as the demands placed on the child by the service system to use the technology. Schwartz further reported that more family-sensitive models of collaboration should be developed which are responsive to a wide range of

family needs, strengths, and abilities. This supports findings that technology needs change across the life cycle (Luborsky, 1993; Male, 1994)

Changes in family interaction patterns and stress. If appropriate AT devices are to be identified and IFSP implementation is to be effective, family values, routines, and resources should be considered by team members. When assistive devices are introduced in the home and other naturalistic settings, unexpected outcomes may sometimes result (Bradley et al., 1995; Parette, in press). Margalit (1990) found that the introduction of computers affected the interactional styles of families. Some families reported substantial modifications as a result of technology impact, while some families reported none. This study suggests that technology introduction and usage cannot be expected to create significant results unless the *contextual features* in which the technology is integrated are dynamic and open to change. Parents sometimes use technology with an emphasis on products, rather than process, resulting in "mindless" involvement with the assistive device. The optimal learning environment is one in which "mindful" involvement is demonstrated by family members in which learning processes are emphasized and when parents and children together learn new tasks, find enjoyment in overcoming obstacles, and using effective problem-solving strategies (Margalit, 1990).

Studies have shown that higher levels of stress may occur if (a) increased caregiving demands are placed on families (Angelo, 1995; Haddad, 1992; Harris, 1988), (b) great amounts of time are required for family members to provide team-identified interventions (Brotherson & Goldstein, 1992), and (c) specific assistive devices are provided which require family time and resource commitments (Angelo, 1995; Parette, 1994). Recommendations have been suggested in the literature for team members working with families during the AT assessment process (Parette, in press; Parette & Angelo, in press; Parette & Brotherson, in press). Such sensitivity to changes which might potentially occur in families will reflect respect for the family and may encourage greater family participation in the child's early intervention program.

The social environment. Brotherson, Cook, and Parette (in press) reported on the importance of the home and social environments when attempting to make appropriate decisions about assistive technologies. Family expectations regarding how the home environment is to be used may inhibit children's development and use of AT. Johnson (1987) noted that the home environment of children is one of the most restrictive that they encounter, and recommended that homes include (a) play areas in the main living areas of the home and in the kitchen, (b) improved access to the household thorough scale and positioning of various fixtures, and (c) consideration of both privacy and active play needs within the home. The social environment is of particular importance, and each technological solution considered for a child should examine how it makes the child look, sound, and behave differently from others.

Cultural Influences

Culture has been defined as a common set of beliefs, values, behaviors, and communication patterns that are shared by a particular group of people and learned as a function of social membership (Soto, 1994). Culture exerts a strong influence on the way in which professionals behave toward family members when providing services, and in manner in which family members perceive and respond to these services. The cultural uniqueness of the various American ethnic and cultural groups has been empirically demonstrated (Cuellar, Harris, & Jasso, 1980; Olmeda & Padilla, 1978). Numerous authorities have reported the importance of learning about the value systems and lifestyles of persons from these various cultures (Barrera, 1993, 1994; Greenberg, 1992; Hanson, Lynch, & Wayman, 1990). Without cultural awareness, professionals cannot begin to appropriately serve persons from various ethnic and cultural backgrounds, particularly in light of the recognition that cultural beliefs affect the manner in which professionals and family members view health-related interventions (Johnson, 1989). Such an understanding is vital to an expanded view of AT assessment processes that are family-centered.

It has been recognized that family members from various cultures are less informed about and participate less in special education processes than family members from the dominant or mainstream culture (Bennett, 1988; Harry, 1992). There is still an ongoing lack of respect for culturally diverse families (Harry, 1992), which frequently results in alienation of these family members from participation in special education processes. Many professionals in special education and related disciplines as well as family members are *monocultural*, i.e., their interactions with others tend to be based on their own individual cultural backgrounds or their perceived similarity to others (Lynch & Hanson, 1992). Family members with which these professionals interact may also be *bicultural*, or identify with two cultural groups and interact comfortably with both (Hanson et al., 1990). Still others may be *multicultural*, identifying with the value systems of more than two different groups. Professionals in early childhood

special education who embrace a family-centered philosophy have often reported the difficulty in working with families whose beliefs and values are strongly linked to another group, but who have adopted the values or practices or some other group such as the *dominant culture* (Lynch & Hanson, 1992). This can result in situations in which certain values like early educational experiences may be perceived favorably by the family, while another seemingly related value, such as technology usage, may be viewed negatively (Buzolich et al., 1994; Luborsky, 1993; Lynch & Hanson, 1992; Smith-Lewis, 1992). Goals and perceptions of professionals who make decisions about assistive devices often diverge markedly from those of persons with disabilities who use the devices (Becker & Kaufman, 1988; Ory & Williams, 1990).

The referral and assessment paradigm in American culture has not developed from the perspective of cultural groups other than that of the dominant culture (Gloria Soto, personal communication, September 20, 1995). Early intervention services in this country must work within this dominant culture. As noted by Luborsky (1993), the bright promise of technology is not yet fulfilled due to our lack of understanding how to implement technology usage with individuals from a cultural perspective other than that of the dominant culture. For example, in the dominant American culture, there is an emphasis on (a) individualism and privacy; (b) equality; (c) informality; (d) the future; (e) human goodness, time; (f) action, work, achievement, individualism; and (g) directness and assertiveness (Althen, 1988; Hanson, 1992). Such values influence the expectations that professionals have for young children with disabilities and their families when assistive technologies are prescribed.

While some studies have suggested that parents may refuse to use AT devices due to the stigmatizing effects which result, or due to fears that the child will not attain important developmental skills if they rely on a device (Berry, 1987; Allaire, Gressard, Blackman, & Hostler, 1991), few studies have examined this issue from a cultural perspective. For example, Smith-Lewis (1992) reported that African American and Hispanic American family members of children with severe disabilities often resisted the use of AAC devices, since these families perceive such systems to be unnatural and stigmatizing.

Ethnicity

Ethnicity and ethnic factors have been shown to be related to unique issues that are relevant to the human services professions, including issues relayed to self-esteem, identity formation, isolation, and role assumption (Chin, 1983; Cross, Bazron, Dennis, & Isaacs, 1989; Flaskerud, 1986). Such factors may affect responses to AT intervention recommendations, team processes, and usage of devices (Blackstone, 1993; Luborsky, 1993). Ethnic differences have been reported to affect the responses that family members have to disability (Chan, 1986; Hanline & Daley, 1992; Zborowsky, 1969), as well as their willingness to receive interventions from professionals who use different interaction styles preferred by families (e.g., authoritarian or nonauthoritarian) (McGoldrick, Pearce, & Giordano, 1982; Harry et al, 1995). However, in special education, professionals have historically expected families from culturally diverse backgrounds to adapt to the expectations of the dominant culture (Correa, 1987). This suggests a need for processionals involved in AT decision-making to develop a better understanding of the familial and ethnic heritages that affect their perceptions of disability and expectations of professionals who work with families (Luborsky, 1993). Ethnic patterning of family and user concerns, and their own beliefs about treatment effectiveness must enter into the decision-making process (Luborsky, 1993) along with traditional objective information held by professionals about disability and treatment effectiveness.

Acculturation

Acculturation is a powerful determinant of attitudes and behaviors, affecting many aspects of a child's and family's functioning (Smart & Smart, 1992). Damen (1987) defined acculturation as a process involving the internalization of knowledge necessary to function in a particular societal group. This process involves a disengagement from the world view, learning new ways to meet old problems, and shedding ethnocentric evaluations (Damen, 1987). As Ruiz (1981) described acculturation, it involves giving up "old ways" and adopting "new ways". A more recent definition suggests that acculturation is the degree to which people from a particular culture display behavior which is more like the behavior exhibited by persons in the dominant culture (Torres-Davis & Trivelli, 1994). Barerra (1993) noted that the acculturation process can result in significant stressors being placed on family members, especially when behaviors associated with competence in one environment differ from those in other environments. Persons within specific cultures will be influenced by acculturation factors in varying degrees dependent on many factors, including geographic and social isolation of the family (Torres-Davis & Trivelli, 1994). Wide ranges of individual acculturation effects have been demonstrated with regard to various health-related attitudes and social behaviors (Kunkel, 1990; Pomales & Williams, 1989). The influences of such

factors must be considered by team members during AT decision-making, as family members will tend to lie along a continuum, ranging from strong affiliation with their own unique culture and its values and beliefs, to alignment with the dominant culture. This understanding will assist the team in understanding the priorities, concerns, and resources of families during AT decision-making, and enable the selection of devices from a more culturally sensitive perspective.

Social Influences, Developmental Expectations, and Life Experiences

Of particular importance for professionals is to recognize that cultural factors are influenced by situational, or social factors. This often results in family members agreeing with professionals that certain types of interventions are appropriate, and yet behave very differently in the context of other settings (Lynch & Hanson, 1992). The cultural and psychosocial aspects of AT usage have until recently been understudied. Qualitative reports of technology usage with older persons with disabilities (Becker & Kaufman, 1988; Murphy, 1987; Sheer & Luborsky, 1991; Stein, 1979;) indicate that there is a dynamic interaction between devices and consumer factors. These factors include (a) differences in assistive device acceptability due to the person's age-related normative psychological and physical capabilities, (b) life cycle changes, and (c) family life stage (Luborsky, 1991; Murphy, 1987; Smith-Lewis & Ford, 1987). Also, the presence of a disability often results in emotional effects which influence motivation (Turner & Noh, 1988).

Luborsky (1993) noted that the social and personal stigma associated with persons who are visibly different in appearance or behavior is a major factor in decisions to use devices. People tend to desire to avoid social stigma and to preserve one's self-esteem and prestige as whole persons through the maintenance of independent functioning. Thus, an equation emerges that explains why devices may not be used by some family members. The consumer's own sense of the social consequences of device usage in the community and daily life may be the denominator, while the perceived need for AT by related services personnel may be the denominator (Luborsky, 1993).

While earlier reports of family reluctance to initiate interventions when changes in family routines are anticipated (Lund, 1986), more recent studies have described consumers or family members who opted not to use specific assistive devices due to quality of life issues (Brotherson et al., 1994) or visibility of disability (Kaufert & Locker, 1990), even though improved functioning would result from device usage. As Ainlay, Becker, and Coleman (1986) noted, such motivational factors are not inherent traits of the AT or of the disability, but are a function of the *social contexts* of device usage. High context cultures, such as Asian American, Native American, Hispanic, and African American, place greater emphasis on the amount of information transmitted through the context of situations, the relationship of persons involved in the interaction, and physical cues (Hall, 1974, 1984). Conversely, Anglo-European family members typically display low context backgrounds in which direct, concise verbal communication is perceived as being important. Less importance is given to communications that do not get to the point quickly (Hecht, Andersen, & Ribeau, 1989). This has important implications for professionals during the AT assessment process, as sensitivity to the cultural background of family members should suggest varying ways in which information is communicated during team decision-making (DeGangi et al., 1994; Lynch & Hanson, 1992).

The life course refers to the culturally defined expectations of stages and transitions for the socially defined individual (Luborsky, 1993). Miller (1979) reported that developmental milestones across Anglo-European, African American, and Native American cultures varied markedly. Developmental expectations across the lifespan may have an influence on the responsiveness of children with disabilities and family members when AT devices are prescribed (Harry et al., 1995). If, for example, the expectation for independence for young children in the area of dressing oneself is almost a year earlier for a Native American family than for Anglo European or African American families, greater importance may be placed on AT devices which lead to increased independence in this area of functioning.

Life experiences in using AT device will influence family perceptions of and willingness to use AT (Luborsky, 1991, 1993; Scheer & Luborsky, 1991; Soto, 1995). As described by Luborsky (1993), personal experiences in using assistive devices result in a unique perspective and set of themes developed by the person with a disability over time, which affects the focus of evaluations and interventions provided and resulting experiences. Luborsky's (1993) central premise is that users of assistive devices evaluate and use equipment based on objective subjective social, cultural, and lifetime contexts. This provides support to the position taken by Nespor (1987) who claimed that beliefs and attitudes gain their power from past experiences which influence the comprehension of subsequent events. The challenge to professionals in early childhood special education, then, is to recognize that the provision of appropriate

AT first begins with a sensitivity to the influence of culture and ethnicity (Buzolich et al., 1994), since these influences help to shape the identities of persons as individuals and as family members (Hanson, 1992).

Future Assessment Considerations

Proponents of multicultural special education emphasize the characteristics of environments in which persons function since these are the contexts for individual characteristics to be formed (Bennett, 1990; Nieto, 1992). Harry et al. (1995) noted that "every family is a unique blend of its own cultural heritage, acculturational and social status, and ideosyncratic style" (p. 101). This framework "guides and bounds life practices" (Hanson, 1992, p. 3). Thus, it may be expected that cultural beliefs and practices in the U. S. lie along a continuum in which all groups interact to some degree (Harry et al., 1995). A holistic view recognizes all parts of any particular culture must be seen *within the larger context* in which it operates. Professionals in special education are challenged to develop individualized and open-ended strategies for discovering what families believe, which will enable them to develop appropriate intervention approaches.

Presented in Figure 4 is a comprehensive model for AT decision-making that may provide direction for service systems attempting to implement family-centered practices that are culturally sensitive. As can be seen, the model assumes that the influences of dominant culture provides a background against which decision-making takes place. The assumption of this model, however, is that appropriateness of AT decision-making is based on greater sensitivity to cultural and other issues than has characterized such practices in the past. Against the background of the dominant culture, young children with disabilities and family members are affected by social influences, life experiences, and developmental expectations across the lifespan. Also embedded against this complex background are additional domains related to AT decision-making, which include culture, ethnicity, and acculturation factors, each having an impact on the family. Interacting with the family are more traditional domains that include child characteristics, device features, and service systems issues.

Implications

The process of AT assessment must be individualized to each child with a disability and family to ensure relevance and appropriateness (Anderson & Goldberg, 1991). Given the many possible variations for AT assessment, even within a particular cultural group, professionals should, at the least, become competent in *both* family-centered strategies (Anderson & Battle, 1993; Anderson & Goldberg, 1991; Cross et al., 1989) and culturally competent intervention approaches (American Speech-Language-Hearing Association, 1995; Anderson & Battle, 1993; Anderson & Fenichel, 1989; Anderson & Goldberg, 1991; Cross et al., 1989; Harry et al., 1995; Hetzroni & Harris, 1995; Roberts et al., 1990; Trivelli, 1994). Such a process may require professionals and family members to jointly engage in a process of "mutual adaptation" (Correa, 1987) in which both family members and professionals change through the process of collaboration.

Barerra (1994) noted the complexity of the assessment process involving young children with disabilities and their families from differing cultures. Professionals might interpret or perceive values related to child and family behaviors that diverge from family interpretations or others in the family's environment (Barerra, 1994). Thus, socioeconomic status, educational level, experience, and differences between and within cultures might also affect the assessment process (Hanson & Lynch, 1995).

Turnbull and Turnbull (1990) advocate that professionals should gather information on (a) family resources, (b) family interaction patterns, (c) family functions, and (d) family life cycle. Other important information includes (a) the family's experiences in the native country, (b) roles of extended family members and siblings, (c) amount of community support available, (d) religious, spiritual, and cultural beliefs, and (e) parenting practices (Correa, 1989).

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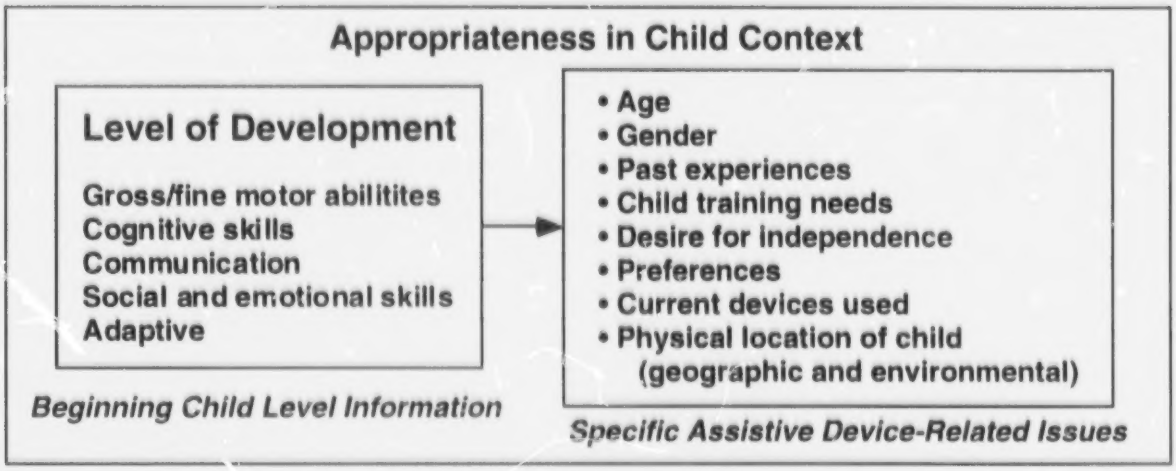

Figure 1. Important child characteristics which influence the selection of appropriate assistive technology devices.

Figure 2. Important device features which influence the selection of appropriate assistive technology devices.

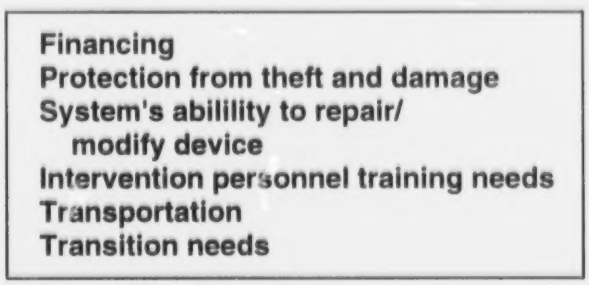

Figure 3. Important service system characteristics which influence the selection of appropriate assistive technology devices.

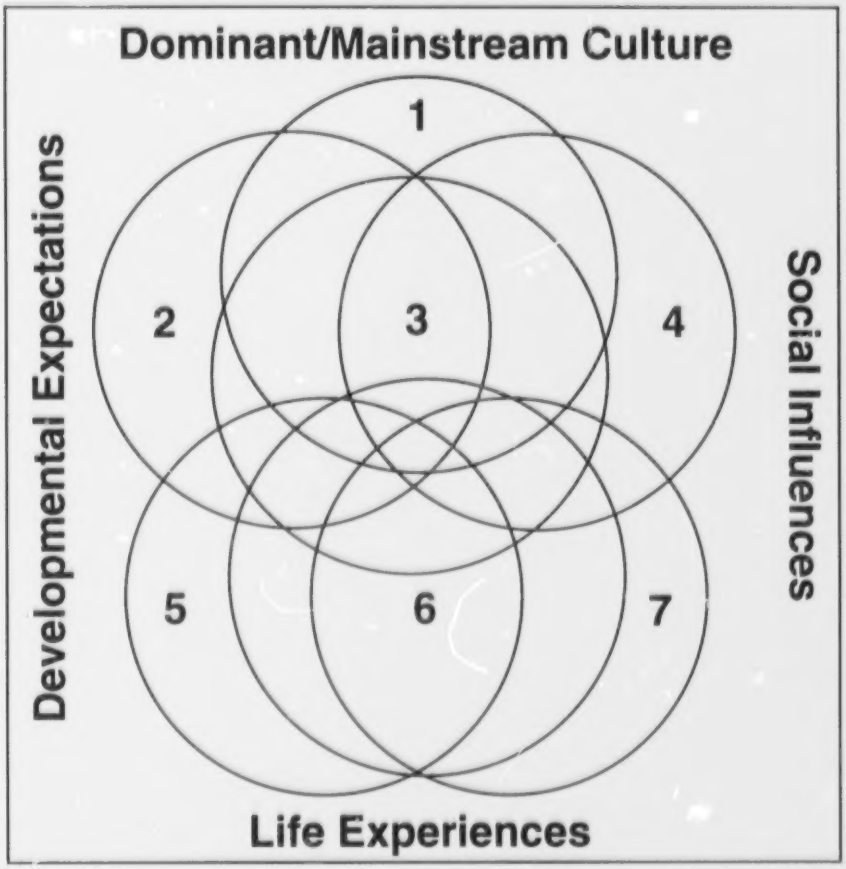

Figure 4. Comprehensive model for family-centered, culturally-sensitive, assistive technology decision-making. © 1995, Howard P. Parette, Jr.

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